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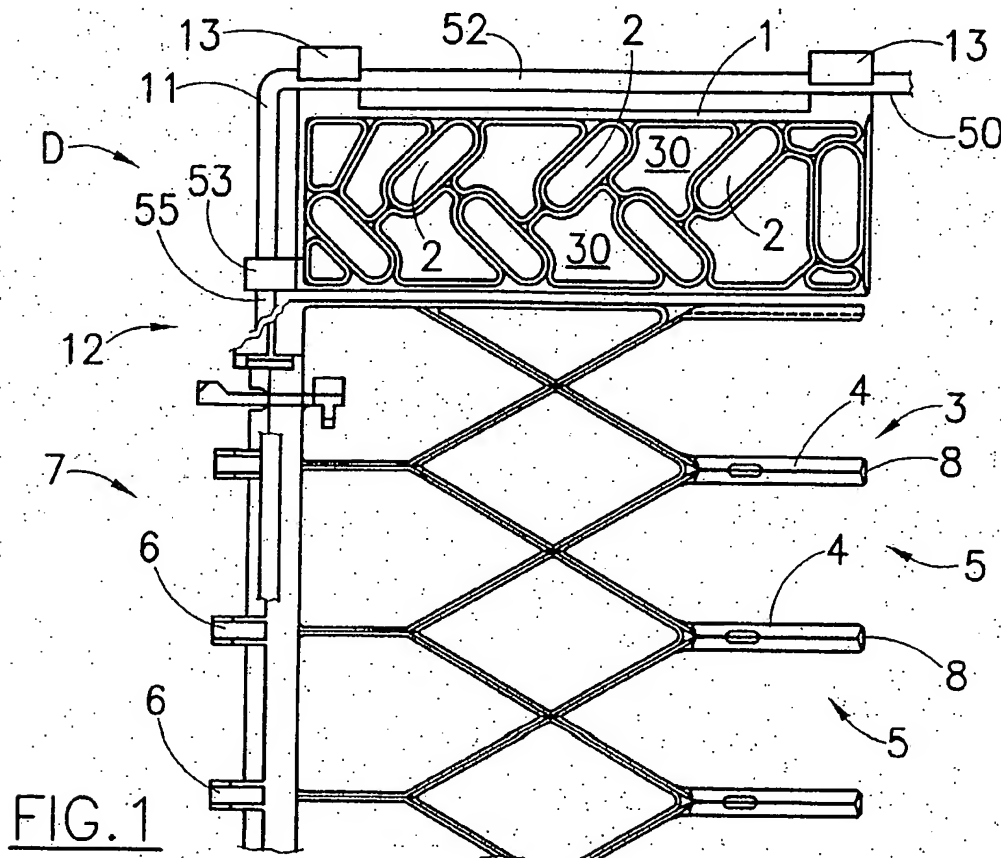
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(54) **Dishwasher rack with cutlery holder support**

(57) A rack (12) of dishwasher (20) is described comprising at least a front or back wall (52), at least one side wall (11) and at least one cutlery holder support (1, 100) provided with holes (2) for the housing of cutlery and wide areas (30) for the flow of the washing water

and/or the flow of drying air. The at least one cutlery holder support (1) is connected with said at least one front or back wall (52) of said rack (12) and it assumes a working position (D, X) such as to form with the bottom plane (40) of the rack (12) an angle (A, Z) smaller than a right angle.



## Description

[0001] The present invention refers to a dishwasher rack provided with cutlery holder support, in particular to a dishwasher top rack.

[0002] Dishwashers racks are made up of rigid structures made of steel rods that are welded to each other in interlacement and subsequently plasticised. The dishes are inserted into the appropriate spaces created by the interlacement of the rods, in such a way that they maintain, during the washing, a correct position with an inclination of the surfaces, as regards the washing sprays coming from the sprayers, such as not to create difficultly reachable zones, directly or by deviation of the same spray.

[0003] Dishwashers racks are built in such a way as to rationalise the arrangement of the load of dishes inside the racks, since the surface useful for the loading has a limited size. In addition a very important prerogative consists in the safety of the load to be washed even when the weight of the latter is considerable.

[0004] Currently dishwashers racks comprise small plastic containers for the cutlery that are arranged in separate position as regards the rack for the containment of the dishes. In this way the efficiency of the washing and possible drying of the cutlery is subordinated to the search and definition of the optimal position of the dishes. Therefore both the washing and the drying operation of the cutlery are penalised. In addition the capacity of the current cutlery containers is unavoidably rather reduced.

[0005] A rack for household dishwashers comprising a cutlery holder support suitable to solve the problems above exposed is described in the patent application EP 1099404. The rack has a plastic cup shelf connected with one side wall of the same in such a way as to form, when in operating conditions, with the bottom plane of the rack an angle smaller than a right angle. The cup shelf is integral with one or two cutlery holder supports; each cutlery holder support comprises holes for the housing of cutlery and wide areas for the flow of the washing water and/or the flow of drying air.

[0006] In view of the state of the art herein described, scope of the present invention is to provide a dishwasher rack provided with a support for cutlery that has an easy location in the dishes rack.

[0007] According to the present invention, such scope is attained by means of a dishwasher rack comprising at least a front or back wall, at least a side wall and at least a cutlery holder support provided with holes for the housing of cutlery and wide areas for the flow of the washing water and/or the flow of the drying air, characterised in that said at least one cutlery holder support is connected with said at least one front or back wall of said rack and it assumes a working position such as to form with the bottom plane of said rack an angle smaller than a right angle.

[0008] Owing to the present invention it is possible to

provide a rack for dishwasher with a cutlery holder support that is easy to arrange and to remove for cleaning.

[0009] The characteristics and the advantages of the present invention will become evident from the following detailed description of an embodiment thereof, that is illustrated as a non limiting example in the enclosed drawings, in which:

Figure 1 is a top view of a part of a dish rack provided with a cutlery holder support according to an embodiment of the present invention;

Figure 2 is a schematic front view of a part of the rack in Figure 1 with cutlery holder support in rest position;

Figure 3 is a schematic side view of a part of the rack in Figure 1 with cutlery holder support in working position;

Figure 4 is a top view of a part of a dishes rack provided with two cutlery holder supports according to a variation of the embodiment of the present invention;

Figure 5 is a schematic front view of a dish rack provided with two additional cutlery holder supports according to another variation of the embodiment of the present invention;

Figure 6 is a schematic side view of a part of the rack in Figure 5 with the cutlery holder support in working position.

[0010] In Figure 1 a part of a dish rack 12 provided with a cutlery holder support 1 according to an embodiment of the present invention is shown. The cutlery holder support 1, preferably of plastic, has a rectangular shape and it is provided with a plurality of internal holes 2 for the positioning of various pieces of cutlery and with wide areas 30 for the flow of the washing water and/or the flow of drying air.

[0011] The cutlery holder support 1 is preferably located in a corner created by a front or back wall with one of the side walls 11 of the rack 12; in Figure 1 the support 1 is located in a corner created by the back wall 52 and a side wall 11. The support is revolvingly coupled to a horizontal rod 50 of the back wall 52 of the rack 12 by means of snap insertion of said rod 50 into half-cylindrical fixed end housings 13, known from the Italian utility model No. 00229638, belonging to the support 1.

[0012] The cutlery holder support 1 can be arranged in a rest position C, visible in Figure 2 and in dotted line in Figure 3, in which the support 1 is substantially parallel to the back wall 52 and is maintained in said position by the engagement of the housings 13 with the rod 50.

[0013] The support 1 can be arranged in a working position D defined by the inclination of the same support 1 as regards an axis P parallel to the bottom 40 of the rack 12 so as to form an angle A smaller than a right angle (Figure 3). In said working position D a projection 53 of the support 1 is engaged with a rod 55 belonging to the side wall 11 of the rack 12 (Figure 1).

[0014] According to variations of the embodiment of the present invention, one or more cutlery holder supports 1 can be provided located at each corner created by the side walls 11 and front and back walls 52 of the rack 12; in Figure 4 a part of a dish rack 12 is visible that is provided with two cutlery holder supports 1 located at the corners created by the side walls 11 with the back wall 52.

[0015] A plastic cup holder rack 3 can also be provided located in proximity of a cutlery holder support 1 and provided with teeth 4 making up a top rack 5 and of teeth 6 making up a bottom rack 7; the teeth 4 of said top rack 5 are preferably provided with appendices 8, as visible in Figure 1.

[0016] The shelf 3 can be connected in fixed or mobile way with the side wall 11 of the rack 12; the shelf 3 is arranged in at least one working position in such a way so as to form with the bottom plane 40 of the rack 12 at least a first angle smaller than a straight angle. In the case of the mobile connection of shelf 3 with the side wall 11 of the rack 12, the shelf 3 is revolvingly coupled to the horizontal rod 10 of the side wall 11 by means of snap insertion of said rod 10 into half-cylindrical fixed end housings 13 of the shelf 3. The rack 12 is made by means of steel rods that are welded in interlacement and plasticised so as to define a bottom plane 40 and at least one pair of side walls 11 with parallel spaces for the containment and positioning of dishes arranged vertically.

[0017] It is also possible that each cutlery holder support 1 is revolvable toward the outside of the rack 12 still creating, when in working position, an angle smaller than a straight angle with the axis P parallel to the bottom 40 of the rack 12.

[0018] In Figure 5 the dish rack 12 provided with the cutlery holder support 1 and an additional cutlery holder support 100 according to the present invention is schematically shown. The cutlery holder support 100 is similar to the cutlery holder 1 from which it differs only in the smaller size and in that it is revolvingly coupled to the horizontal rod 101 of the back wall 52 of the rack 12 by means of snap insertion of said rod 101 into half-cylindrical fixed end housings 13, known from the Italian utility model No. 00229638, belonging to the support 100. The rod 101 belongs to the central part of the rack 12 and it is thus located lower than the rod 50. The cutlery holder support 100 can be arranged, as the support 1, in a rest position W, shown in Figure 5, and in a working position X, shown in Figure 6, in which the support 100 is inclined as regards an axis P' parallel to the bottom 40 of the rack 12 so as to create an angle Z smaller than a straight and preferably equal to the angle A formed by the support 1 in working position. When in the working position a projection 103 of the cutlery holder support 100 engages with the vertical rod 104 of the rack 12.

[0019] According to other variations of the embodiment of the present invention, one or more cutlery holder supports 100 can be provided, as an alternative or in addition to one or more supports 1, located in the central

part of the rack 12 and connected with the central part of the front and/or back wall of the rack 12 up to a maximum of 4 cutlery holder supports 1 and four cutlery holder supports 100.

[0020] The positioning of the cutlery inside the dishwasher allows a more accurate washing of the same by limiting the contact zone of the tools and by favouring a greater flow of the washing water. In fact the geometry of the cutlery holder support 1 has solids and voids in order to limit at most the points of contact between tools and to favour the drainage of the water.

[0021] In addition such positioning of the cutlery allows to use wide areas for the flow of a constant heat flow for a more homogenous drying of the same cutlery.

[0022] The position of the cutlery holder supports 1 and 100 allows to lighten the cutlery rack 12 from the load of cutlery and it eliminates the angles negative to the inlet of the washing water, thus allowing an overall result of higher efficiency in the washing and drying with reference to standards.

[0023] The cutlery holder supports 1 and 100 are revolvingly coupled to the back wall 52 so as to be easily removable.

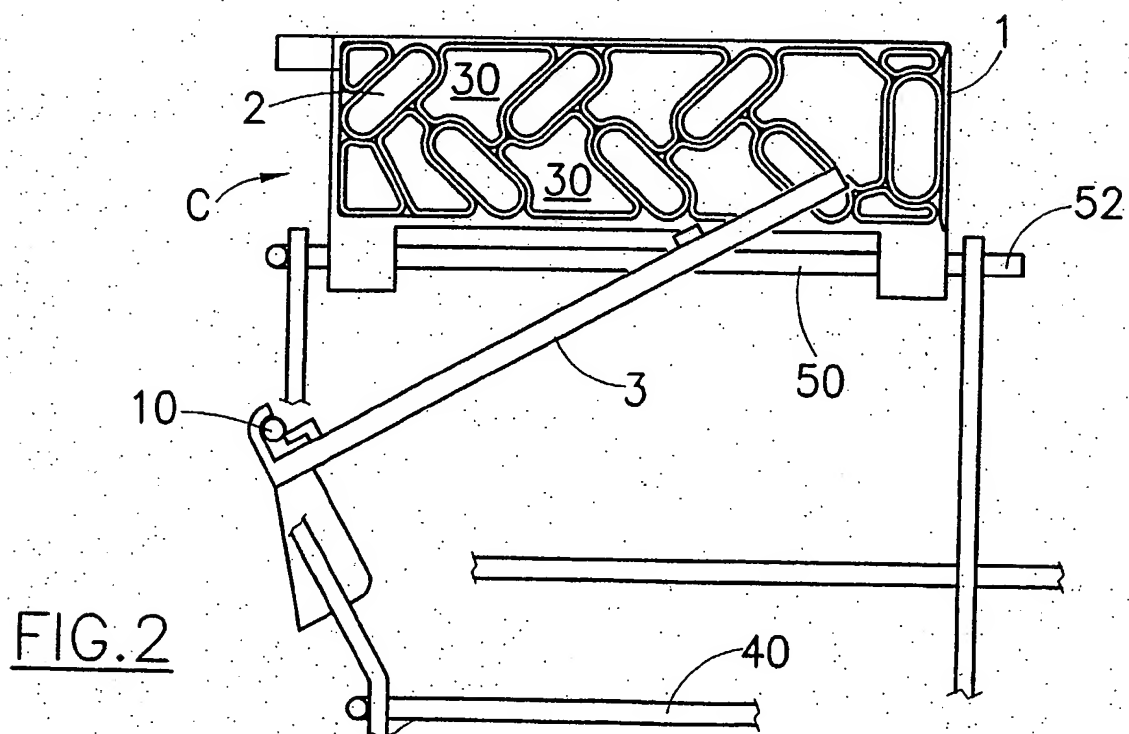
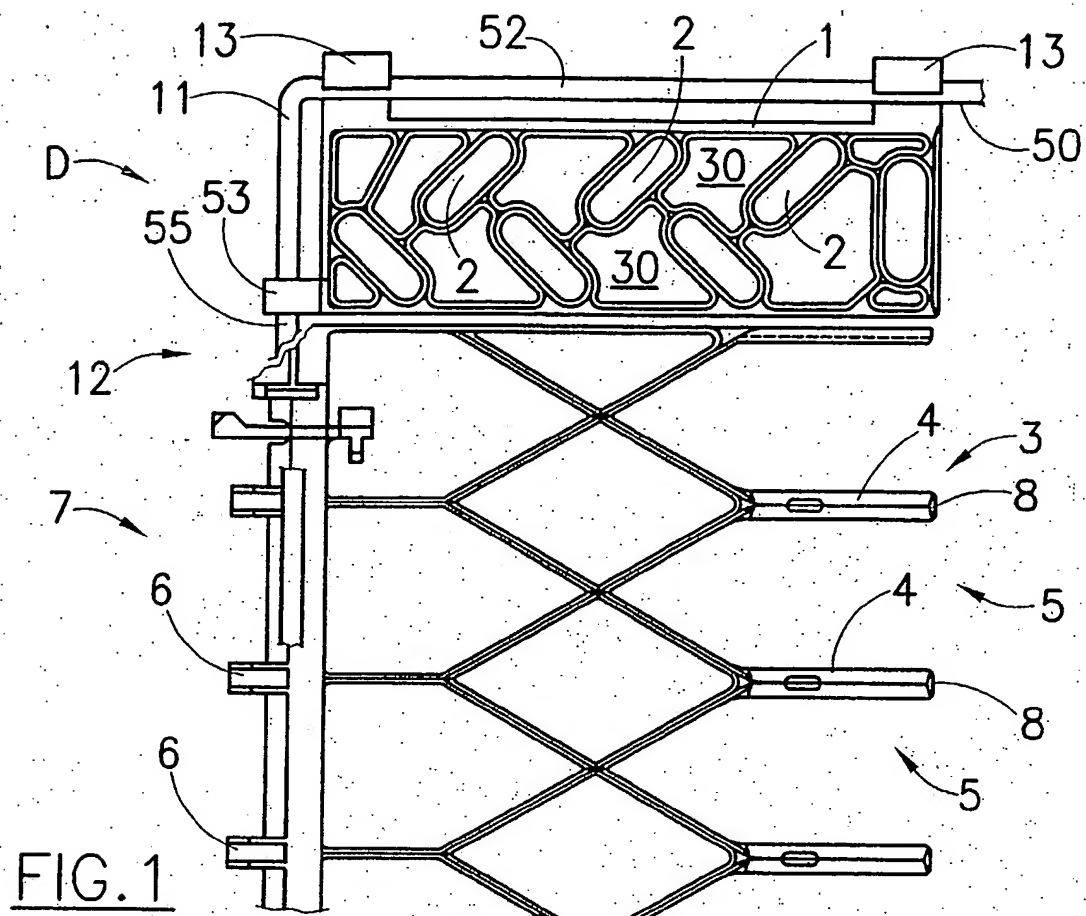
[0024] The dishes rack 12 can be the bottom or top rack of a dishwasher.

## Claims

1. Rack (12) of dishwasher (20) comprising at least a front or back wall (52), at least one side wall (11) and at least one cutlery holder support (1, 100) provided with holes (2) for the housing of cutlery and wide areas (30) for the flow of the washing water and/or the flow of drying air, **characterised in that** the said at least one cutlery holder support (1) is connected with said at least one front or back wall (52) of said rack (12) and assumes a working position (D, X) such as to form with the bottom plane (40) of said rack (12) an angle (A, Z) smaller than a right angle.
2. Rack according to claim 1, **characterised in that** it comprises at least a shelf (3) connected with said at least one side wall (11) and located in at least one working position in such a way as to create with the bottom plane (40) of said rack (12) at least an angle smaller than a right angle.
3. Rack according to claim 1, **characterised in that** said support (1, 100) is revolvingly coupled to said front or back wall (52) of the rack (12).
4. Rack according to claim 3, **characterised in that** the revolving coupling of said support (1, 100) to said front or back wall (52) of the rack (12) is made by means of half-cylindrical fixed end housings (13) that are suitable for the insertion of a horizontal rod

(50, 101) that is part of the same wall.

5. Rack according to claim 4, **characterised in that** said at least one cutlery holder support (1) is located in proximity of a corner of the rack (12) between the front or back wall (52) and said side wall (11). 5
6. Rack according to claim 5, **characterised in that** said support (1) can be locked in said working position (D) by means of projections (53) in engagement with horizontal rods (55) that are part of a side wall (11) of the rack (12). 10
7. Rack according to claim 4, **characterised in that** said cutlery holder support (100) is located in a central part of the dish rack (12). 15
8. Rack according to claim 7, **characterised in that** said support (100) can be locked in said working position (X) by means of projections (103) in engagement with vertical rods (104) that are part of the front or back wall (52) of the rack (12). 20
9. Rack according to claim 4, **characterised in that** said cutlery holder support (1, 100) is revolvingly coupled to said rack (12) so as to be manually removable. 25
10. Rack according to claim 6 or 8, **characterised in that** it comprises two cutlery holder supports (1, 100) connected with the front or back wall (52) of the rack (12). 30
11. Rack according to claim 6 or 8, **characterised in that** said rack (12) has a front wall and a back wall (52) and it comprises two cutlery holder supports (1, 100) connected with the front wall of the rack (12) and two additional cutlery holder supports (1, 100) connected with the back wall (52) of said rack (12). 35  
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12. Rack according to claims 6 and 8, **characterised in that** it comprises at least two cutlery holder supports (1, 100) connected with the front wall of the rack (12). 45
13. Rack according to claims 6 and 8, **characterised in that** it comprises at least two cutlery holder supports (1, 100) connected with the back wall (52) of the rack (12). 50
14. Rack according to claims 6 and 8, **characterised in that** said rack (12) has a front wall and a back wall (52) and it comprises at least two cutlery holder supports (1, 100) connected with the front wall of the rack (12) and at least two additional cutlery holder supports (1, 100) connected with the back wall (52) of said rack (12). 55



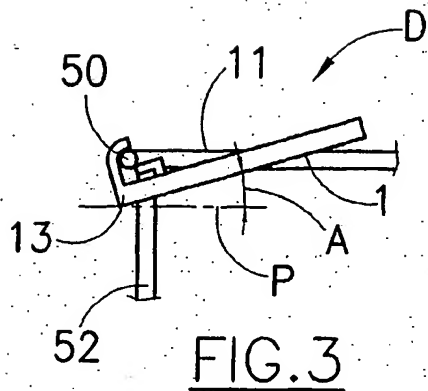


FIG. 3

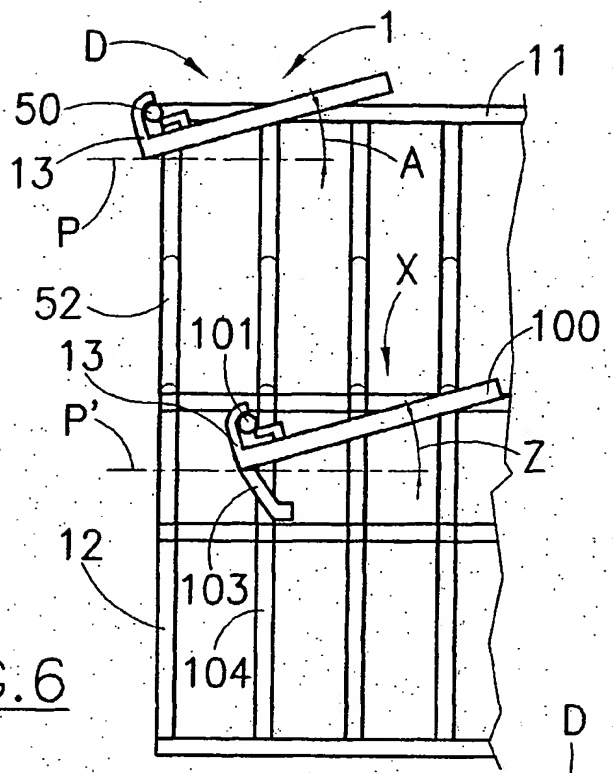


FIG. 6

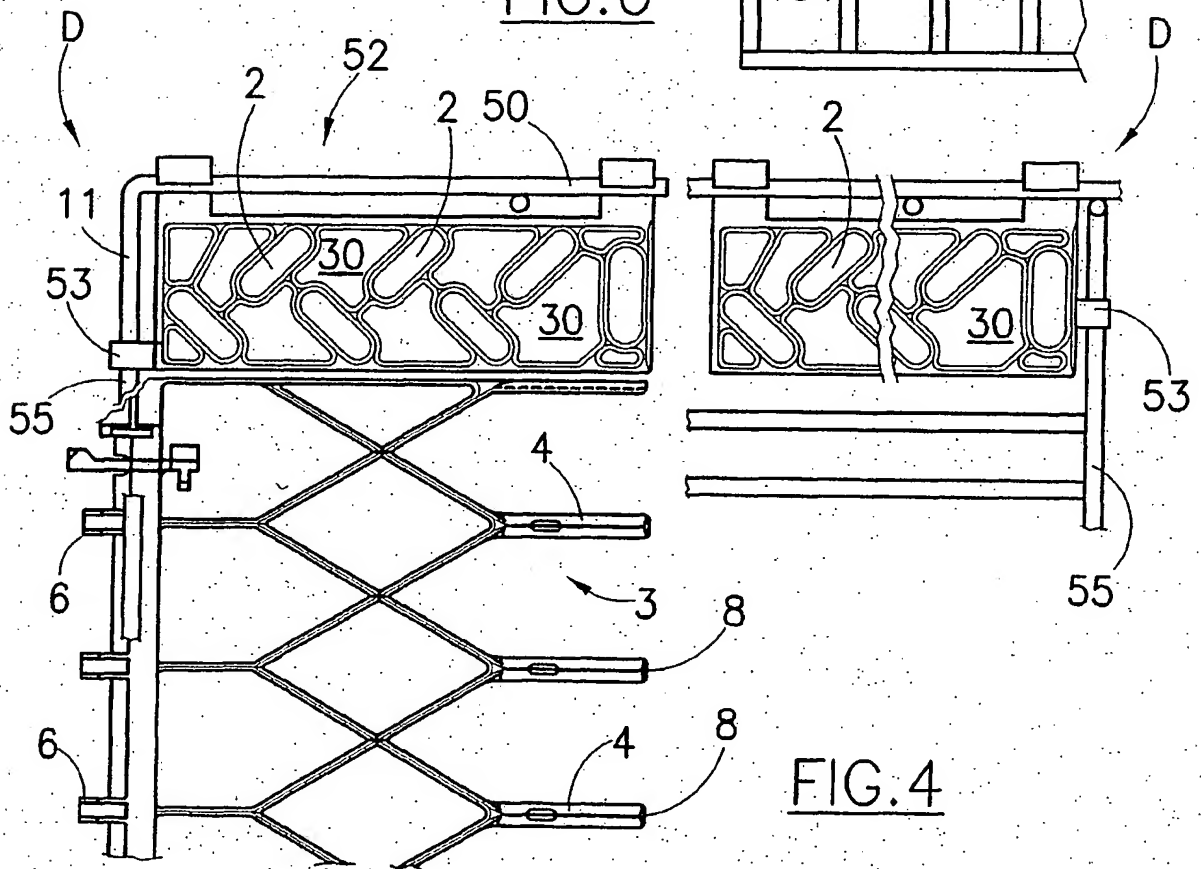


FIG. 4





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The present search report has been drawn up for all claims			
Place of search MUNICH		Date of completion of the search 30 October 2003	Examiner Lodato, A
<b>CATEGORY OF CITED DOCUMENTS</b> X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			



**ANNEX TO THE EUROPEAN SEARCH REPORT  
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